

SEMISTACK - SKAI



SKAI Solutions

150V MOSFET Advanced Drive System

SKAI 5001MD15 1452 W
SemiKron Advanced
Integration (SKAI) module
Liquid-cooled version

Features

- 150V Trench MOSFET technology on AlN DCB substrate
- Integrated DC-link electrolytic capacitors
- Pressure contact technology for improved power cycling performance
- Optimal thermal management with integrated liquid-cooled heatsink
- Two integrated current sensors with option to include three
- Integrated gate drive and power supply with under-voltage protection. 25-pin DB connector is standard on driver only versions
- Option to include an integrated controller based on TMS320LF2406ADSP. 14-pin AMP SEAL connector is standard on controller versions.

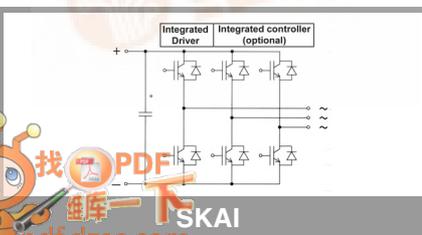
Typical Applications

- Automotive Starter Generator
- Hybrid Vehicles
- Fork Lifts
- Recreation Vehicles
- Fuel Cell Inverters

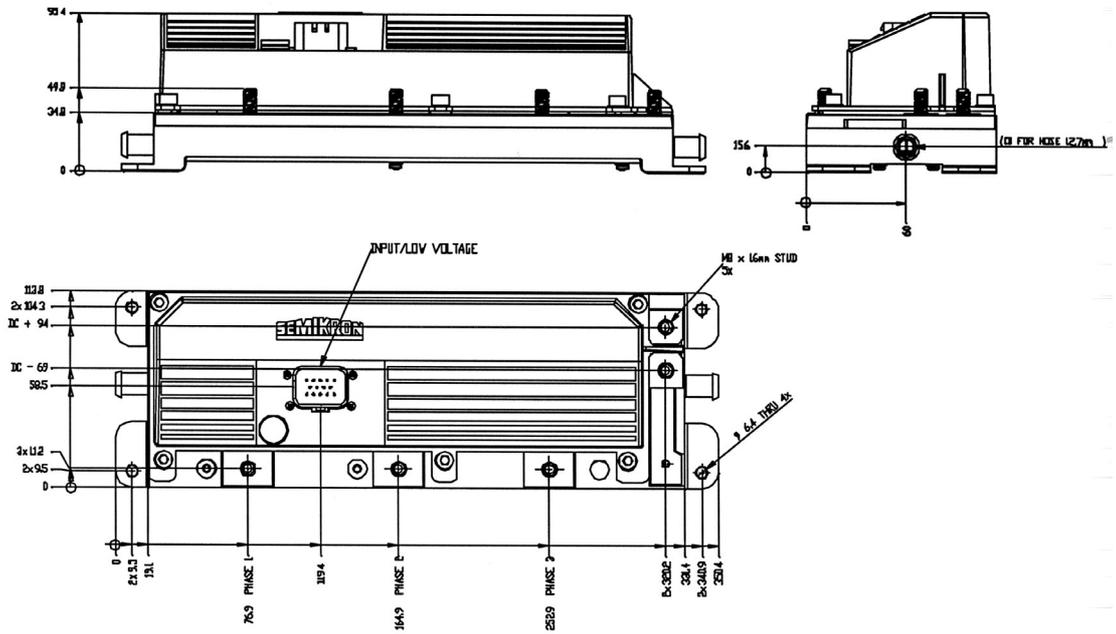
1) Contact SEMIKRON for power loss calculations
2) "r" referenced to built-in Temp. Sensor
3) 50% Water, 50% Glycol

Circuit	I _{rms}	V _{dc}	Types
B6CI	400	120	SKAI 5001MD15 1452 W

Symbol	Conditions	Values	Units		
I _{rms} ¹⁾	no overload, T _{coolant} = 70°C, 10kHz, p.f.=0,8 overload, t<20s	400	A		
		500	A		
V _{(BR)DSS}	MOSFET driver without supply; min	150	V		
R _{DS(ON)}	V _{GS} = 10V, T _j = 25°C V _{GS} = 10V, T _j = 125°C	1,98	mΩ		
		3,39	mΩ		
E _{ON} + E _{OFF}	V _{cc} = 50V, I _D = 300A, T _j = 125°C	5,1	mJ		
V _{SD}	Inverse diode I _F = 400A, T _j = 25°C I _F = 400A, T _j = 125°C	0,98	V		
		0,9	V		
E _{ON} + E _{OFF}	V _{cc} = 50V, I _F = 300A, T _j = 125°C	1,1	mJ		
R _{thjr} ²⁾	Thermal Characteristics / Heatsink per MOSFET switch	0,085	K/W		
		R _{thra} ²⁾	Heatsink to coolant ³⁾ , flow rate V _i = 15 l/min	0,014	K/W
			Heatsink to coolant ³⁾ , flow rate V _i = 5 l/min	0,020	K/W
		P _{aDR}	Pressure drop, Coolant flow rate V _i = 5 l/min	0,08	bar
Pressure drop, Coolant flow rate V _i = 15 l/min	0,61		bar		
C _{eqvl}	Capacitor bank total equivalent capacitance	9	mF		
		V _{DCmax}	max. DC voltage applied to capacitor bank	120	V
V _s	Driver Power supply: min	18	V		
		Power supply: max	30	V	
I _s	Supply current	500	mA		
f _{swmax}	Max. Switching Frequency	20	kHz		
V _{isol}	power terminals to heatsink: AC, 1 min.	1000	V		
T _{vj}	Junction temperature (not including driver)	-40...+175	°C		
T _{stg}	Storage Temperature	-40...+125	°C		
T _{amb}	Operating ambient temperature	-40...+85	°C		
I _{TRIPSC}	Protection Short Circuit Protection	850	A		
		T _{TRIP}	Over-Temp. Protection	115	°C
		U _{DCTRIP}	V _{CC} Overvoltage Protection	126	V
L x W x H	Dimensions Length x Width x Height	315 x 115 x	mm		
		95			
w	approx.	3	kg		



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SKAI 5001MD15 1452 W: General dimensions

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